

REMARKS

Claims 1-20 are pending in this application. The specification and claims 4, 13 and 15 have been amended. No new matter has been added. Reconsideration and allowance of the pending claims based on at least the following remarks is respectfully requested.

I. The Drawings Satisfy 37 C.F.R. §1.83(a)

The Office Action objects to the drawings under 37 C.F.R. §1.183(a) for not showing the "midway" the "mutual transducer" and the "transducer."

Applicant has amended claims 4 and 15 to change "on midway" to "midway." Applicant respectfully submits that it is now clear that "midway", as used in claims 4 and 15, refers to a location term and not a physical element, thus rendering the objection to the drawings for not showing "a midway" moot.

In light of the foregoing, Applicant respectfully requests withdrawal of these objections.

II. The Specification Satisfies the Written Description Requirement

The Office Action objects to the specification for not providing antecedent basis for the terms "rated current," "limited current," "base current," and "whole load apparatus" as used in the claims. Applicant respectfully traverses this objection.

Applicant respectfully notes that the specification already contains adequate antecedent basis for "rated current" (page 3, lines 22-23 and page 4, line 2), "limited current" (page 3, line 22 and page 4, line 2), "base current" (page 6, line 1 and page 15, line 23), and "whole load apparatus" (page 4, line 10). Although most of these antecedent references occur in the summary of the invention, applicant respectfully notes that disclosure in the summary complies with the written description requirement. MPEP §2163(I) ("It is now well accepted that a satisfactory description may be in the claims or any other portion of the originally filed specification" (Emphasis added)).

Applicant respectfully requests withdrawal of the objections to the specification.

III. The Claims Satisfy Formal Requirements

The Office Action objects to claim 13 as containing "with a of base current." Claim 13 has been amended by removing the word "of." Applicant respectfully requests withdrawal of this objection.

IV. The Claims Define Allowable Subject Matter

A. Published Japanese Patent Application 2000-050525 to Masatoshi et al. (Masatoshi).

The Office Action rejects claim 1 as unpatentable under 35 U.S.C. §103(a) over Masatoshi. Applicant respectfully traverses this rejection.

The Office Action alleges Masatoshi teaches a power converter 32, a control section 35, a battery 34, and a load device 20 wherein the control section 35 controls the output voltage of the power converter 32 and the control section 35 judges deterioration of the battery 34. Additionally, the Office Action alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention to split the control section 35 into two circuits to split up the control function and judgment function.

Applicant respectfully notes that in Masatoshi, the control section 35 discriminates deterioration of the battery 34 "based on the time required, until the output current of the converter 32 becomes a prescribed value or higher."

In contrast, claim 1 contains the following limitations: a control circuit for controlling an output voltage of the converter to lower below a steady state, the storage battery thus to discharge at a more limited current than the rated current thereof, and the converter to supply a part of load current to the load; and a judgment circuit for judging the degradation of the storage battery based on the discharge voltage of the limited discharge current.

Applicant respectfully submits that Masatoshi does not teach all of the limitations of claim 1. While the translated Abstract of Masatoshi appears to teach that the control section 35 can control the output voltage of converter 32, nowhere does Masatoshi teach or suggest that the control section 35 controls the output voltage of the converter 32 to be lower than the steady state as in claim 1. Additionally, Masatoshi does not teach the judgment circuit of claim 1.

Nowhere does Masatoshi disclose judging the deterioration of a battery based on the discharge voltage of the battery. In contrast, Masatoshi discloses, at multiple places, that judging of the deterioration of the battery is based on the time it takes for the output current of the converter 32 to reach a predetermined level. Masatoshi discloses judging deterioration of the battery based on the time it takes the output current of the converter to reach a predetermined value at paragraphs 13, 15, 17, 26, 27, and 30.

In contrast, the judgment circuit of claim 1 judges degradation "based on the discharge voltage" at the output of the storage battery. Because the current of one circuit element and the voltage of a different circuit element are different circuit characteristics, they cannot be considered equivalent. Thus, the control section 35 of Masatoshi does not teach the judgment circuit of claim 1.

Further, while the Office Action has noted that splitting one circuit into two has been held to be something only requiring routine skill, the Office Action has not provided the motivation that would have caused one of ordinary skill in the art at the time of the invention to have pursued this modification as required under MPEP §706.02(j). Specifically, the Office Action does not point out where Masatoshi suggests that it would be advantageous to split the control section 35 into a separate control circuit and judgment circuit. The teaching or suggestion to make the modification must not be based on the Applicant's disclosure. See *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991), MPEP §706.02(j).

For the foregoing reasons, Applicant submits that Masatoshi does not teach or suggest all the features of claim 1. Therefore Applicant respectfully requests withdrawal of the rejection.

B. U.S. Patent 6,509,657 to Wong et al. (Wong)

Claims 1, 7 and 8 are rejected under 35 U.S.C. §103(a) as unpatentable over Wong. Applicant respectfully traverses this rejection.

The Office Action asserts that Wong teaches a microcontroller 22 which corresponds to the control circuit recited in the claims; a power supply 12 which corresponds to the converter recited in the claims; and a motherboard 20 which corresponds to the judgment circuit recited in the claims. The Office Action admits that Wong does not disclose judging the degradation of the storage battery by monitoring the discharge voltage. Nevertheless, the Office Action alleges that it would be obvious to modify Wong to include an element that performs the identical function, in substantially the same way, and produces substantially the same results as the judgment circuit of the claims.

Initially, Applicant noteS that the argument set forth in the rejection is directed to the obviousness of a mean-plus-function limitation as defined in 35 U.S.C. §112, sixth paragraph (see MPEP §2183). However, the "judgment circuit" feature of claim 1, which the Office Action alleges would be obvious, is not a means-plus-function limitation.

In analyzing claim features to determine whether 35 U.S.C. § 112, 6th Paragraph is invoked, the Court of Appeals for the Federal Circuit (hereafter "Federal Circuit") has stated that "the failure to use the words "means" creates a presumption that § 112, ¶ 6 does not apply." *Personalized Media Communications, LLC v. ITC*, 161 F.3d 696 (Fed. Cir. 1998) (hereafter "*Personalized Media*") (citations omitted) [emphasis added]. At issue in *Personalized Media* was the claimed element of "a digital detector for receiving said transmission and detecting said predetermined signal ... based on ..." [emphasis added] The

Federal Circuit held the recited digital detector to not be in means-plus-function format because (1) the absence of "means" created a presumption that § 112, ¶ 6 was not invoked, and "detector" is a sufficient recitation of structure because (2) "detector is not a generic term such as "means," "element," or "device"; nor is it a coined term such as "widget" or "ram-a-fram" " *Id.* (citations omitted). Further, the Federal Circuit stated (3) "even though the term "detector" does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as "detectors." " Following this analysis, the recited "judgment circuit for judging" cannot be considered a means-plus-function feature as (1) the term "means" is not used, thus creating the presumption that 35 U.S.C. § 112, 6th Paragraph is not invoked, (2) "judgment circuit" is clearly not a generic term such as "means," "element," or "device"; nor is it a coined term such as "widget" or "ram-a-fram," and (3) the term "judgment circuit," even more so than the term "detector," will conjure specific structures to one skilled in the art (Applicant notes that there are not only electrical detectors, but also mechanical, e.g. piezoelectric, and chemical detectors whereas the term "circuit" in "judgment circuit" suggests only an electronic judgment circuit). Thus, the argument alleged by the Office Action is not applicable to the "judgment circuit" feature of claim 1 and is improper.

Regardless, to be an obvious equivalent of a means-plus-function limitation, the communication of the change in power supply status to the motherboard in Wong would have to be the identical function recited in claim 1. As mere communication of the change in a power supply status to the motherboard is not identical to "judging the degradation of the storage battery based on the discharge voltage of the limited discharge current," it could not support an obviousness rejection even if the "judgment circuit" feature of claim 1 were a means-plus-function limitation under 35 U.S.C. §112, sixth paragraph.

Regarding claim 7, the Office Action's allegation that the recited 10-70% can be disregarded as only an optimum range is improper. A goal of Applicant is the reduction of the load of degradation judgment on the battery being monitored. Thus, the recited reduction in the battery discharge current is an important aspect of one example of Applicant's novelty. Wong at least fails to disclose any limiting of the discharge current. Thus, even if the recited 10-50% is considered an optimum range, Wong does not disclose any limiting of the discharge current which one of ordinary skill in the art could optimize. Therefore, claim 7 is patentable over Wong.

Regarding claim 8, Wong at least fails to disclose (1) a trigger source which (2) includes a memory (3) having an operational schedule of the degradation judgment where (4) the converter lowers its output voltage at the timing of the trigger signal to (5) start the battery to discharge. Wong appears to disclose that the microcontroller initiates battery discharge based on the value of the input high DC voltage (col. 2, lines 48-52), very different than as recited. Thus, claim 8 is patentable over Wong.

For the foregoing reasons, Applicant respectfully requests withdrawal of the rejection.

C. Published Japanese Patent Application No. JP-2000-050525 to Masatoshi et al. in view of Published Japanese Patent Application No. JP-2000-139040 to Higaki (Higaki).

Claims 3 and 4 are rejected under 35 U.S.C. §103(a) as unpatentable over Masatoshi in view of Higaki. Applicant respectfully traverses this rejection.

This rejection is premised upon the presumption that Masatoshi discloses all of the features of claim 1. Because, as discussed above, Masatoshi does not disclose all of the features of claim 1, the rejection is improper. Applicants respectfully request withdrawal of the rejection.

D. Published U.K. Patent Application No. GB-2287843A to Sivakumar et al. (Sivakumar) in view of Published Japanese Patent Application No. JP-2000-050525 to Masatoshi et al.

Claims 1-20 are rejected under 35 U.S.C. §103(a) as unpatentable over Sivakumar in view of Masatoshi. Applicant respectfully traverses this rejection.

The Office Action alleges that Sivakumar teaches an uninterruptible power supply comprising a monitoring control unit 50 corresponding to the control circuit recited in the claims and a converter 38 corresponding to the converter recited in the claims. The Office Action admits that Sivakumar does not teach the judgment circuit recited in the claims. The Office Action alleges that Masatoshi teaches the judgment circuit recited in the claims and asserts that one of ordinary skill in the art at the time of the invention would have been motivated to combine the judgment circuit of Masatoshi to Sivakumar.

Applicant respectfully submits that the Office Action has improperly combined Sivakumar and Masatoshi. Applicant respectfully notes that the uninterruptible power supply of Sivakumar is designed for high-speed switching and maintenance of specific in-tolerance voltage levels when there is a failure of the external power source (see paragraph beginning on page 5, line 19) as well as to minimize parts count (see paragraph beginning on page 9, line 11). As adding a judgment circuit to Sivakumar would increase the complexity and involve reduced voltage outputs provided to the load, it is unclear why one of ordinary skill in the art at the time of the invention would have looked to add the judgment circuit of Masatoshi. The motivation or suggestion to combine references and the reasonable expectation of success must come from the prior art and not come from Applicant's disclosure. MPEP §706.02(j), *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

Furthermore, even if Sivakumar and Masatoshi are combined as suggested by the Office Action, they do not teach the invention as recited in claim 1 and those dependent

thereon because the control section 35 of Masatoshi does not teach the judgment circuit recited in claim 1 and its dependents for the reasons discussed under subsection A.

In independent claim 2, the recited judgment circuit determines the degradation of the storage battery "based on a charging time of the storage battery." This element is not taught in either Sivakumar or Masatoshi. Masatoshi discloses a control section 35 which determines degradation of the battery based on the time, after the storage battery begins supplying power to the load, until the current of the converter 32 rises to a predetermined level. The time required for a battery to charge during a charging cycle and the time required for a converter's current output to reach a given level during a battery discharge operation are independent circuit characteristics. Thus, without additional teaching or suggestion, a judgment circuit which uses one does not teach the other.

As all the elements of independent claims 1 and 2 and their dependent claims have not been taught by Sivakumar in combination with Masatoshi, Applicant respectfully requests withdrawal of the rejection of claims 1-20.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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